



Carolina Sky Watcher



National Weather Service, Newport, NC

Vol. 10, Number 2 (#36) June 2003-November 2003

HURRICANE ISSUE

NOAA FORECASTERS SAY 6 TO 9 HURRICANES COULD THREATEN IN 2003

NOAA and FEMA stress preparedness for residents in hurricane prone areas

May 19, 2003—Top hurricane experts from NOAA today said the 2003 Atlantic hurricane season will likely have above normal levels of activity. The outlook calls for the potential of 11 to 15 tropical storms, with six to nine hurricanes, and two to four classified as major hurricanes (category 3 or higher on the Saffir-Simpson Hurricane Scale). Officials from NOAA and the Federal Emergency Management Agency advised residents in Atlantic and Gulf Coast states to be prepared throughout the season, which runs June 1 through Nov. 30. In the central Pacific, NOAA hurricane experts forecast two to three tropical storms; this is slightly less than the long-term

average of 4.5 tropical storms per season.

Recognizing the damaging and potentially deadly effects of the tropical storms and hurricanes that form in the Atlantic Ocean,



Hurricane Fran showed its power on
Topsail Island

Caribbean Sea and Gulf of Mexico each year, President George W. Bush signed a proclamation announcing May 18 -24 as National Hurricane Awareness Week. At a news conference

aimed at increasing public awareness of the upcoming hurricane season, officials from NOAA and FEMA described the anticipated level of hurricane activity this season, interagency coordination efforts to help mitigate the consequences of a land falling hurricane and the importance of taking steps to prepare families and communities in advance.

Assistant Secretary of Commerce for Oceans and Atmosphere and Deputy NOAA administrator said, "This year the Atlantic hurricane outlook calls for a 55 percent chance of an above normal season, a 35 percent chance of near normal, and only a 10 percent chance for a below-normal season such as last year."

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In the past two years alone, nine tropical storms and one hurricane hit the United States causing 54 deaths and \$6.3 billion in direct economic damage. The toll can be even higher when people are not prepared," added Mahoney.

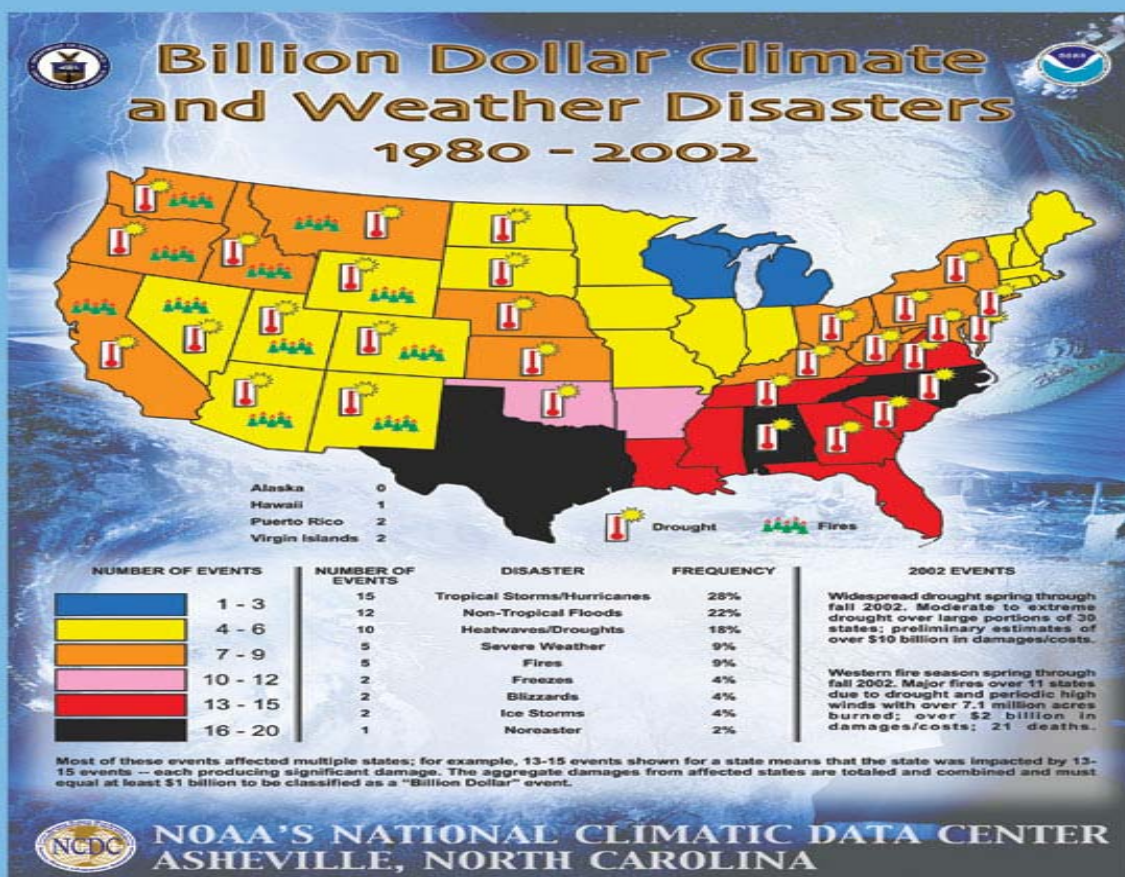
In his proclamation, President Bush encourages families along coastlines to take steps today that can save lives and minimize property damage through planning and preparation.

Being prepared for hurricane season is key in reducing the loss of life and property," said Undersecretary Mike Brown of the Department of Homeland Security and director of FEMA. "Knowing what to do when a hurricane strikes takes planning and preparation, and includes steps that range from knowing your evacuation route to obtaining flood insurance."

DHS and FEMA encourage families to take three basic steps in order to be better prepared in the event of a disaster, including assembling a disaster supply kit, creating a family emergency plan and understanding their risks. FEMA's, Are You Ready? A Guide for Citizen Preparedness, available online offers tips and information that can help families accomplish these three tasks.

On average the Atlantic hurricane season brings 10 tropical storms, with six reaching hurricane strength and two of those classified as major. Above normal activity has been observed during six of the last eight Atlantic hurricane seasons, reflecting an overall larger number of tropical storms and hurricanes observed since 1995. In 2002, there were 12 named storms, four of which became hurricanes (Gustav, Kyle and Lili).

By John Elardo



Amateur Radio and “Hams” During Hurricanes

Nearly all forms of communication risk being reduced or cut during hurricanes. Main phone line circuits are often compromised by wind or water damage, or overloaded by increased phone usage. The same can be said about cell

amateur radio operators, otherwise known as ham radio operators or just “hams”, can swing into action assisting emergency communications efforts and working with public service agencies.

One example of this is the ham

hurricane reports from other hams that are located in the areas being affected by the hurricane. In turn, the WX4NHC hams at the Hurricane Center relay severe weather information, hurricane forecasts,

or safety information to the amateur community being affected. The reports that the affected hams provide help the NHC forecasters, who incorporate these reports into their forecasts.

When a hurricane is affecting the local area, amateur radio operators swing into action here as well. When a hurricane warning is issued for the local area, the SKYWARN net is activated, and several VHF and UHF amateur radio frequencies are set

aside for local hams

to relay their weather or damage reports to the SKYWARN net control. Typically a SKYWARN ham will be located on site at the NWS Newport weather office ham station to act as a liaison between the reports coming across the SKYWARN net and the forecasters who use this information.

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WX4NHC Amateur Radio Station HF/VHF/UHF Operating Position

phones, which may be plagued by overloaded circuits during times of severe weather by local residents trying to check on loved ones.

During the strongest hurricanes, nearly all forms of ordinary communication may be all-together cut. This is when Amateur Radio and the Amateur Radio Service shines. In times of disaster, when regular communication channels fail,

radio station located at the National Hurricane Center. This station, WX4NHC, is operated by volunteer amateur radio operators who activate the station whenever a hurricane is within 300 miles of landfall in the areas of the western Atlantic, the Caribbean or the eastern Pacific.

The WX4NHC ham radio station is manned by a group of volunteers who collect real time

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Lastly, if all forms of communication fail between the NWS Newport office and the National Hurricane Center, these two offices can communicate via ham radio on the Hurricane Watch Net frequency, 14.325 MHz.

Overall, amateur radio and ham operators have an important role during hurricanes. Their public service helps the NWS in its mission of "protection of life and property" and is greatly appreciated by all.



NWS Newport/Morehead City, NC Amateur Radio Station, WX4MHX

For more information about amateur radio, visit the American Radio Relay League web site at <http://www.arrl.org>, or call the ARRL at 1-800-32-NEWHAM. For more information about the Amateur Radio Station at the National Hurricane Center, visit the web site <http://www.fiu.edu/orgs/w4ehw/>.

By Nick Petro

NEW BUOY DEPLOYED NEAR DIAMOND SHOALS

In late March the National Data Buoy Center (NDBC) deployed a 3 meter discus buoy at 35.15 degrees North and 75.29 degrees West. The new buoy is very close to the old Diamond Shoals Light Tower, and is listed as buoy 41025 or Diamond Shoals Red Buoy.

The NDBC has wind and wave equipment on the old light tower... however corrosion of the tower has made it unsafe to

send work crews out to repair the equipment. Because meteorological data



is so critical from off the Outer Banks, the NDBC moved quickly to install the new buoy. It has been working flawlessly since it was deployed, and this type of buoy is typically very reliable. The

buoy reports wind speed and direction, wave height and period, atmospheric pressure, temperature and dew-point, and sea water temperature. Data from the buoy can be viewed from the Buoy Observations section of the Newport/Morehead City home page www.erh.noaa.gov/mhx/ or from the NDBC www.ndbc.noaa.gov.

By Bob Frederick

EMPLOYEES RECEIVE RECOGNITION



Gil Wagi (left) and Gene Chiellini (right) received recognition for their service dedication as Hydrometeorological Technicians at the Newport/Morehead City, NC National Weather Service Office. The role of the Hydrometeorological Technician has always been a crucial component of the National Weather Service team. In today's high-tech office setting, the role and professionalism of the Hydrometeorological Technician is often seamless in the quest of achieving the overall goal of the agency. Gil and Gene are just two of the many

reasons why the Newport office continues to meet and exceed the goals of providing blue-ribbon service to our customers while protecting the life and property of our community.

By Central Wills

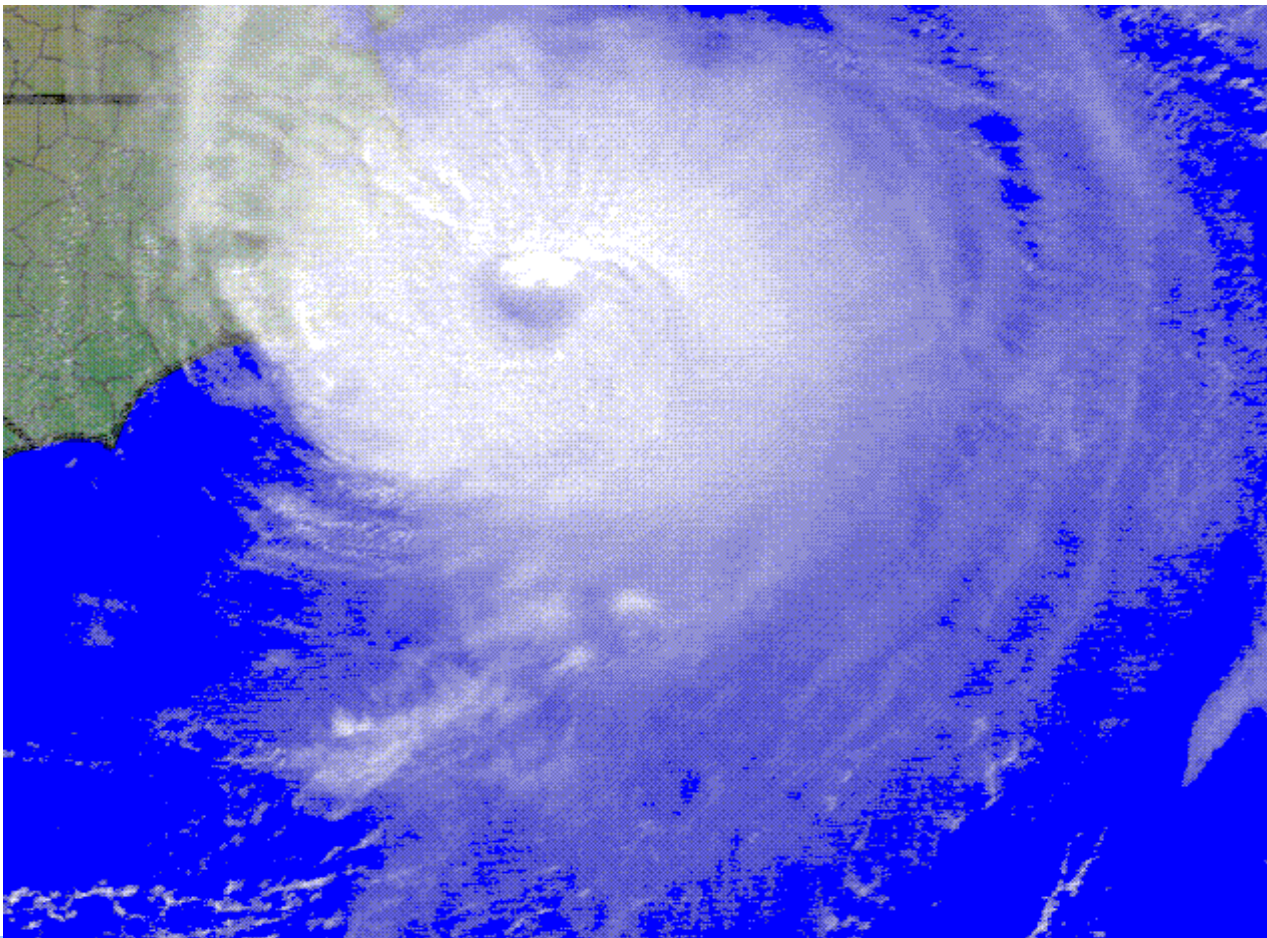
Good Job
Guys

HURRICANE TRIVIA QUESTIONS

(Answers on page 8)

1. Most of the destruction caused by a hurricane is due to:
 - A. high winds
 - B. flooding
 - C. lightning
2. A Hurricane Watch is issued for possible hurricane conditions within:
 - A. 12 hours
 - B. 24 hours
 - C. 36 hours
3. Which of the following are NOT good to have in your hurricane survival kit:
 - A. Flashlights, portable radio and extra batteries
 - B. Food that needs to be refrigerated or cooked
 - C. First Aid kit

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HURRICANE TRIVIA QUESTIONS

(Continued from page 6)

4. Hurricanes weaken when:

- A. They move over the warmer Gulf Stream
- B. They meet tornadoes
- C. They move over colder water

5. Hurricane categories are defined by the:

- A. Saffir-Simpson scale
- B. Beaufort wind scale
- C. Weather Channel

6. Tropical cyclones in the western Pacific are called:

- A. Hurricanes
- B. Cyclones
- C. Typhoons

7. A hurricane is defined as a rotating low pressure circulation with sustained winds of:

- A. 39 mph or greater
- B. 64 mph or greater
- C. 74 mph or greater

8. Which storm had the strongest winds in NC:

- A. Fran (1996)
- B. Hazel (1954)
- C. Diana (1984)

9. What is the fastest wind speed ever recorded in a hurricane:

- A. 100 mph
- B. 280 mph
- C. 350 mph

10. Since 1875, the only storm to hit the N.C. coast in July was:

- A. 1916 storm
- B. Bertha

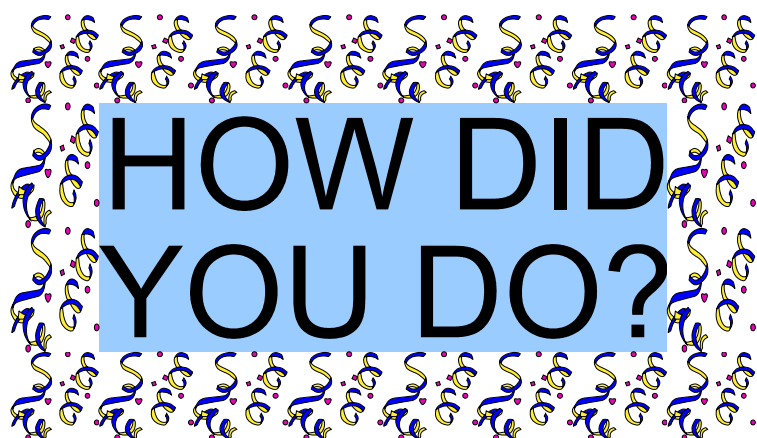
Soggy Spring for Eastern North Carolina

The Automated Surface Observation System (ASOS) in Beaufort has not been in existence long enough to have established 30 year normals but we still have observations that help in forecasting the weather.

Over the past two months the eastern one-third of the country has been dominated by a series of upper level lows, which means it has had a moist southwesterly flow in the mid and upper parts of the atmosphere more than usual. This unusual weather pattern for this time of the year has produced well above normal rainfall totals for the months of March, and April. Below is a monthly summary for the past three months for the three ASOS sites in eastern North Carolina; New Bern, Beaufort, and Cape Hatteras.

| | AVERAGE MONTHLY TEMP | HIGH TEMP | LO TEMP | MONTHLY PRECIP |
|---------------|-------------------------|--------------|------------|-------------------|
| NEW BERN | Feb 45.2 | 78 on 22nd | 23 on 13th | 5.3 |
| | Mar 56.4 | 79 on 26th | 34 on 8th | 3.39 |
| | Apr 60.6 | 86 on 30th | 33 on 1st | 7.15 |
| BEAUFORT | Feb 46.5 | 72 on 22nd | 27 on 13th | 2.62 |
| | Mar 56.4 | 75 on 28th | 35 on 8th | 9.14 |
| | Apr 60.5 | 77 on 30th | 43 on 1st | 9.49 |
| CAPE HATTERAS | Feb 46.8 | 65 on 22/23 | 29 on 19th | 3.68 |
| | Mar 54.9 | 74 on 28th | 35 on 1st | 7.49 |
| | Apr 59.7 | 75 on 30th | 46 on 9th | 9.94 |

New Bern's rainfall total for the past three months was 15.84 inches, which is 4.15 inches above normal and Cape Hatteras has had 21.11 inches, which is 8.93 inches above normal. Rainfall at Cape Hatteras on the 10th of April was an all-time record for the date with 2.66 inches. Beaufort's three month total was 21.25 inches.



1. B
2. C
3. B
4. C
5. A
6. C
7. C
8. B
9. B.
10. B

Answers to
Hurricane
Trivia Questions

2003 ATLANTIC HURRICANE SEASON FORECAST

Dr. Bill Gray, Colorado State University, is predicting another active hurricane season for the Atlantic hurricane basin in 2003. Dr. Gray predicts there will be 14 named storms this year. He expects that eight of these storms will reach hurricane intensity, 74 mph or greater, and of those, three will reach major hurricane status, with sustained winds greater than 110 mph. He indicates a 48 percent probability that one or more major hurricanes will strike the east coast of the United States including the Florida peninsula. This is higher than the average over the last century which is 31 percent. NOAA predicts similar numbers with 11 to 15 named storms, 6 to 9 hurricanes, and 2 to 4 major hurricanes.

Gray and his team of researchers anticipate the trend of warmer water temperatures to continue across the hurricane genesis areas. In fact, he suspects that this trend will continue perhaps for two



more decades, similar to what occurred from the 1940s to the mid 1960s, when the frequency of hurricanes, including major hurricanes, was much higher. Gray points to a strong thermohaline circulation resulting in warmer waters temperatures over a larger expanse of the Northern Atlantic and for a long duration of time. We've seen these conditions since 1995. In addition, lower sea surface temperatures are expected, and upper level shearing

winds are expected to be less, thus more favorable conditions for tropical cyclone development.

La Nina conditions, colder than normal water temperatures across the Eastern Pacific, are expected to develop by the summer which results in less westerly shearing winds across the tropical Atlantic Ocean and Caribbean Sea. It's interesting to note that during La Nina years an average of 11 or 12 storms developed, and locations along the Atlantic seaboard experienced more frequent multiple hurricane strikes. For example, during 1955, a La Nina year, 3 hurricanes struck Eastern North Carolina in a span of six weeks. Hurricanes Connie, Dianne, and Ione wreaked havoc across eastern North Carolina with severe winds and coastal inundations. More recently, in 1996, a La Nina year, Hurricanes Bertha and Fran impacted the same area in Eastern North Carolina during the summer months.

By John Cole

The Saffir-Simpson Hurricane Scale is a 1-5 rating based on the hurricane's present intensity. This is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. Wind speed is the determining factor in the scale, as storm surge values are highly dependent on the slope of the continental shelf in the landfall region. Note that all winds are using the U.S. 1-minute average.

Category One Hurricane:

Winds 74-95 mph (64-82 kt or 119-153 km/hr). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage. Hurricanes Allison of 1995 and Danny of 1997 were Category One hurricanes at peak intensity.

Category Two Hurricane:

Winds 96-110 mph (83-95 kt or 154-177 km/hr). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable dam-



The Saffir-Simpson Hurricane Scale

age to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings. Hurricane Bonnie of 1998 was a Category Two hurricane when it hit the North Carolina coast, while Hurricane Georges of 1998 was a Category Two Hurricane when it hit the Florida Keys and the Mississippi Gulf Coast.

Category Three Hurricane:

Winds 111-130 mph (96-113 kt or 178-209 km/hr). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtain wall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required. Hurricanes Roxanne of 1995 and Fran

of 1996 were Category Three hurricanes at landfall on the Yucatan Peninsula of Mexico and in North Carolina, respectively.

Category Four Hurricane:

Winds 131-155 mph (114-135 kt or 210-249 km/hr). Storm



surge generally 13-18 ft above normal. More extensive curtain wall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km). Hurricane Luis of 1995 was a Category Four hurricane while moving over the Leeward Islands. Hurricanes Felix and Opal of 1995 also reached

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Category Four status at peak intensity.

Category Five Hurricane:

Winds greater than 155 mph (135 kt or 249 km/hr). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of all structures located

less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required. Hur-

ricane Mitch of 1998 was a Category Five hurricane at peak intensity over the western Caribbean. Hurricane Camille, that made landfall in Mississippi in 1969, was a Category Five hurricane. Hurricane Andrew, that made landfall south of Miami in 1993 was the last Category Five hurricane to strike the United States.

By John Elardo

THE NEW VOICES OF THE NATIONAL WEATHER SERVICE NOAA WEATHER RADIO - EXPANSION

New Broadcast Voices:

On June 9, the voice of the

National Weather Service, broadcasting from the Newport/Morehead City office was upgraded to incorporate the voice of "TOM."

The new voice provides a significant pronunciation enhancement to the computerized weather broadcast. Another familiar voice "DONNA" has been upgraded and will continue delivering the weather in concert with "TOM"

Coverage Expansion:

NWR (NOAA Weather Radio) coverage of Eastern North Carolina continues to expand. A new

NWR transmitter located in Duplin county is expected to begin broadcasting by the end of July 2003. The continuous broadcast will cover a radius approximately 25 to 30 miles from the transmitter, located in

EASTERN NC NWR TRANSMITTERS

| Station Name | Call Sign | Frequency |
|---------------|-----------|-------------|
| New Bern | KEC-84 | 162.400 MHz |
| Cape Hatteras | KIG-77 | 162.475 MHz |
| Mamie | WWH-26 | 162.425 MHz |
| Warsaw | * | 162.425 MHz |
| Windsor | * | 162.525 MHz |

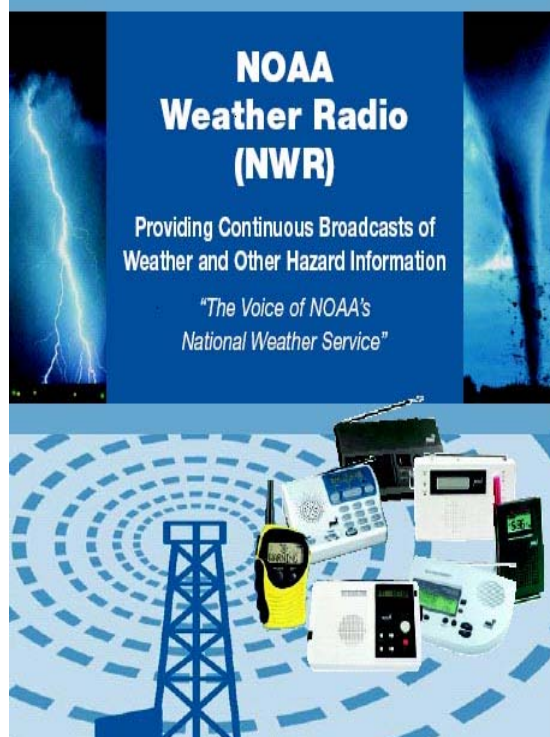
*not assigned at the time of this writing

the town of Warsaw. Local weather forecasts, hourly observations, severe weather and other hazard information is just some of the information the Newport office will broadcast for the listening area. Another transmitter located in Windsor in Bertie county is

also expected to begin broadcasting by the end of July 2003. The Windsor transmitter will provide broadcast coverage for the area of northeastern NC. The program and broadcast from the Windsor transmitter will be provided by the National Weather Service office in Wakefield, Virginia.

Comments and suggestions concerning our NWR broadcast are welcomed from our listeners.

By Central Wills





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In This Issue...

Hurricane

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Comments concerning this publication or questions about the National Weather Service can be directed to us. We invite submissions for inclusion in this publication

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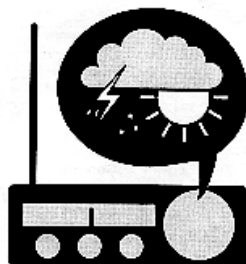
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You can monitor the latest weather conditions around the area, as well as our forecasts on:

NOAA Weather Radio

New Bern Transmitter KEC-84 162.400 MHz
 Hatteras Transmitter KIG-77 162.475 MHz
 Mamie Transmitter WWH-26 162.425 MHz

Available 24 Hours a Day!



This quarterly newsletter is for Skywarn Spotters, schools, emergency managers, media, and other interested parties in the 15 county area in east- central North Carolina served by the National Weather Service Office in Newport, NC.

This publication, as well as all of our forecast products, are also available on our internet page at:
www.erh.noaa.gov/mhx/